CLAIMS

It is claimed:

1. An image sensor unit comprising

a first photoconverter comprising a first array of first light receiving elements, the first light receiving elements having first imaging regions, the first photoconverter for photoelectrically converting light of a first light quality from a source image for outputting signals by photoelectric conversion

a second photoconverter comprising a second array of second light receiving elements, the second light receiving elements having second imaging regions different from the first imaging regions of the first light receiving elements, the second photoconverter for photoelectrically converting light of a second light quality from the source image for outputting signals by photoelectric conversion.

2. The image sensor unit of claim 1 wherein

the first light receiving elements have a first dimension in a first direction

the second light receiving elements have a second dimension in the first direction

the first dimension is different from the second dimension.

3. The image sensor unit of claim 2 wherein the first direction is a main scanning direction.

4. The image sensor of claim 2 wherein the first direction is a sub-scanning direction.

5. The image sensor unit of claim 2 wherein

the first light receiving elements have a third dimension in a second direction

the second light receiving elements have a fourth dimension in the second direction

the third dimension is different from the fourth dimension.

6. The image sensor unit of claim 5 wherein

the first dimension is larger than the second dimension

the third dimension is larger than the fourth dimension

7. The image sensor unit of claim 1 wherein

the first imaging region is determined according to a first sensitivity of the first light receiving elements to the first light quality

the second imaging region is determined according to a second sensitivity of the second light receiving elements to the second light quality.

8. The image sensor unit of claim 1

the first array comprising a first number of first light receiving elements

the second array comprising a second number of second light receiving elements

the second number is larger than the first number.

9. The image sensor unit of claim 1 wherein

the first light quality comprises a first color

the second light quality comprises black and white

the image sensor comprises a third photoconverter comprising a third array of third light receiving elements, the third light receiving elements having third imaging regions, the

third photoconverter for photoelectrically converting light of a third light quality from the source image for outputting signals by photoelectric conversion, the third light quality comprising a second color different from the first color

the image sensor comprises a fourth photoconverter comprising a fourth array of fourth light receiving elements, the fourth light receiving elements having fourth imaging regions, the fourth photoconverter for photoelectrically converting light of a fourth light quality from the source image for outputting signals by photoelectric conversion, the fourth light quality comprising a third color different from the first color and the second color.

10. The image sensor unit of claim 9 wherein the first imaging region, the third imaging region and the fourth imaging region have a substantially equal area.

11. The image sensor unit of claim 8 wherein the second number is an integer multiple of the first number.

12. The image sensor unit of claim 9 further comprising an output constitution capable of outputting electric signals generated by photoelectric conversion of the monochrome light receiving element array and electric signals generated by photoelectric conversion of the color light receiving element arrays serially in parallel.

13. An image reading apparatus including the image sensor unit of claim 9 and further having a color mode, wherein the image sensor outputs color signals and monochrome signals.

14. The image reading apparatus of claim 13 further comprising a color signal correction unit for improving a quality of the color signals using information in the monochrome signals.

15. The image reading apparatus of claim 14 wherein the color signal correction unit is further for improving the color signals' resolution.

16. The image reading apparatus of claim 14 wherein the color signal correction unit is further for improving the color signals' gradation.

17. The image reading apparatus of claim 14 wherein the color signals are signals of three primary colors and the color signal correction unit is for converting the three primary color signals and the monochrome signals to data indicating color characteristics.

18. A process for producing image signals comprising

providing a first photoconverter comprising a first array of first light receiving elements, the first light receiving elements having first imaging regions

providing a second photoconverter comprising a second array of second light receiving elements, the second light receiving elements having second imaging regions different from the first imaging regions of the first light receiving elements

the first photoconverter photoelectrically converting light of a first light quality from a source image

the second photoconverter photoelectrically converting light of a second light quality from the source image

outputting first signals from the first photoconverter

outputting second signals from the second photoconverter.

19. The process for producing image signals of claim 18 wherein

the first light receiving elements have a first dimension in a first direction

the second light receiving elements have a second dimension in the first direction

the first dimension is different from the second dimension.

20. The process for producing image signals of claim 19 wherein the first direction is a main scanning direction.

21. The process for producing image signals of claim 19 wherein the first direction is a sub-scanning direction.

22. The process for producing image signals of claim 19 wherein

the first light receiving elements have a third dimension in a second direction

the second light receiving elements have a fourth dimension in the second direction

the third dimension is different from the fourth dimension.

23. The process for producing image signals of claim 22 wherein

the first dimension is larger than the second dimension

the third dimension is larger than the fourth dimension

24. The process for producing image signals of claim 23 wherein

the first imaging region is determined according to a first sensitivity of the first light receiving elements to the first light quality

the second imaging region is determined according to a second sensitivity of the second light receiving elements to the second light quality.

25. The process for producing image signals of claim 18 wherein

the first array comprises a first number of first light receiving elements

the second array comprises a second number of second light receiving elements

the second number is larger than the first number.

26. The process for producing image signals of claim 18 wherein the first light quality comprises a first color and the second light quality comprises black and white, the process further comprising

providing a third photoconverter comprising a third array of third light receiving elements, the third light receiving elements having third imaging regions

providing a fourth photoconverter comprising a fourth array of fourth light receiving elements, the fourth light receiving elements having fourth imaging regions

the third photoconverter photoelectrically converting light of a third light quality from the source image, the third light quality comprising a second color different from the first color

the fourth photoconverter photoelectrically converting light of a fourth light quality from the source image, the fourth light quality comprising a third color different from the first color and the second color

outputting third signals from the third photoconverter

outputting fourth signals from the fourth photoconverter.

27. The process for producing image signals of claim 26 wherein the first imaging region, the third imaging region and the fourth imaging region have a substantially equal area.

28. The process for producing image signals of claim 27 wherein the second number is an integer multiple of the first number.

29. The process for producing image signals of claim 18, wherein the first signals are color signals and the second signals are monochrome signals, the process further comprising improving a quality of the color signals using information in the monochrome signals.

30. The process for producing image signals of claim 19 further comprising improving the color signals' resolution.

31. The process for producing image signals of claim 19 further comprising improving the color signals' gradation.

32. The process for producing image signals of claim 19 wherein the color signals are signals of three primary colors and the color signal correction unit is for converting the three primary color signals and the monochrome signals to data indicating color characteristics.

33. A process for producing image signals comprising

receiving a first color image signal from a first color photoconverter for a first color

receiving a second color image signal from a second color photoconverter for a second color

receiving a third color image signal from a third color photoconverter for a third color

receiving monochrome image signals from a monochrome photoconverter for black and white

improving a quality of at least one of the first, second and third color signals using information in the monochrome signals.

34. The process for producing image signals of claim 33 wherein the first color is red, the second color is green and the third color is blue.

35. The process for producing image signals of claim 33, wherein the first, second and third color image signals represent image information for a first number of pixels, and the monochrome image signals represent image information for a second number of pixels, and the second number is larger than the first number.

36. The process for producing image signals of claim 33 comprising improving the quality by

obtaining brightness signals from the monochrome image signals

obtaining a first color difference signal from the first, second and third color image signals

obtaining a second color difference signal from the first, second and third color image signals

obtaining enhanced first color image signals from the brightness signals and the first color difference signals

obtaining enhanced second color image signals from the brightness signals, the first color difference signals and the second color difference signals

obtaining enhanced third color image signals from the brightness signals and the first color difference signals.

37. The process for producing image signals of claim 33 wherein the enhanced first, second and third color image signals have improved resolution over the first, second and third color image signals.

38. The process for producing image signals of claim 33 wherein the enhanced first, second and third color image signals have improved gradation over the first, second and third color image signals.

39. An image reading apparatus comprising

a first sensor which has a first sensitivity

a second sensor which has a second sensitivity lower than the first sensitivity

a control circuit which causes as light receiving time of the first sensor to be shorter than a light receiving time of the second sensor.

40. An image sensor unit comprising

a first sensor for photoelectrically converting light from a source image for outputting signals by photoelectric conversion and comprising

a first array of "n" light receiving elements having first imaging regions

"m" output terminals

a second photoconverter for photoelectrically converting light from the source image for outputting signals by photoelectric conversion and comprising

a second array of "j" light receiving elements having second imaging regions

"k" output terminals

wherein m is greater than or equal to k if n is greater than j.

41. An image reading apparatus comprising

a first sensor for photoelectrically converting light from a source image for outputting signals by photoelectric conversion and comprising a first array of "n" light receiving elements having first imaging regions

a second photoconverter for photoelectrically converting light from the source image for outputting signals by photoelectric conversion and comprising a second array of "j" light receiving elements having second imaging regions

a first clock frequency for driving the first sensor

a second clock frequency for driving the second sensor

wherein the first clock frequency is greater than the second clock frequency when n > j.